

WHAT IS CLAIMED IS:

1. A scanning microscope for using a probe to observe a surface of a sample, comprising:

a probe arranged in the vicinity of a surface of a sample;

a cantilever for supporting the probe;

5 a scanning unit for relatively scanning the probe and the sample; and

a displacement detection system for detecting displacement of the cantilever based on the interaction of the probe and the sample,

10 the scanning unit including:

a first actuator for moving an object to be moved which is either the probe or the sample along a first axis, the first actuator having a pair of end portions, the object being attached to one of the end portions, the first actuator being held at a position in the vicinity of the center in dimension or the center of gravity thereof;

a second actuator for moving the object along a second axis different from the first axis; and

a third actuator for moving the object along a third axis different from both the first axis and the second axis,

20 the second actuator and the third actuator comprising a common cylindrical piezoelectric actuator.

2. A scanning microscope for using a probe to observe a surface of a sample, comprising:

a probe arranged in the vicinity of a surface of a sample;

a cantilever for supporting the probe;

5 a scanning unit for relatively scanning the probe and the sample; and

a displacement detection system for detecting displacement of the cantilever based on the interaction of the probe and the sample,

10 the scanning unit including:

a first actuator for moving an object to be moved which is either the probe or the sample along a first axis, the first actuator having a pair of end portions, the object being attached to one of the end portions, the first actuator being held at a position in the vicinity of the center in dimension or the center of gravity thereof;

a movable member for holding the first actuator;

a second actuator for moving the movable member along a second axis different from the first axis;

20 a third actuator for moving the movable member along a third axis different from both the first axis and the second axis; and

a guide mechanism for restricting movement of the movable member along the first axis.

3. A scanning microscope for using a probe to observe a surface of a sample, comprising:

a probe arranged in the vicinity of a surface of a sample;

a cantilever for supporting the probe;

5 a scanning unit for relatively scanning the probe and the sample; and

a displacement detection system for detecting displacement of the cantilever based on the interaction of the probe and the sample,

10 the scanning unit including:

a first actuator for moving an object to be moved which is either the probe or the sample along a first axis, the first actuator having a pair of end portions, the object being attached to one of the end portions, the first actuator being held at a

15 position in the vicinity of the center in dimension or the center
of gravity thereof;

20 a second actuator for moving the object along a second axis
different from the first axis, the second actuator having a pair
of end portions, one of the end portions being connected to the
first actuator;

a movable member for supporting the second actuator;

25 a third actuator for moving the object along a third axis
different from both the first axis and the second axis, the third
actuator having a pair of end portions, one of the end portions
being connected to a movable member to support the movable
member, the other one of the end portions being fixed; and

a guide mechanism for restricting movement of the movable
member along the first axis.